Log Event A

Borehole # 40-09-06

Borehole Information

Farm : S	**Tank :** S-109	**Site Number :** 299-W23-166
N-Coord : 35,977	**W-Coord :** 75,877	**TOC Elevation :** 663.55
Water Level, ft :	**Date Drilled :** 10/31/1971	

Casing Record

Type : Steel-welded	Thickness : 0.280	ID, in. : 6
Top Depth, ft. : 0	Bottom Depth, ft. : 100	

Borehole Notes:
This borehole was drilled during October 1971 and completed at a depth of 100 ft with 6-in.-diameter casing. The driller's log contains no mention of perforations or grout; therefore, it is assumed that the borehole was not perforated or grouted. The casing thickness is assumed to be 0.280 in., on the basis of published thickness of schedule-40, 6-in. steel tubing. The zero reference for the SGLS logs is the top of the casing; the casing lip is even with the ground surface.

Equipment Information

Logging System : 1	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 04/1996	**Calibration Reference :** GJPO-HAN-5	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number : 1	**Log Run Date :** 07/18/1996	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 0.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 19.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 07/19/1996	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 98.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 18.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

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Borehole 40-09-06

Analysis Information

Analyst : D.L. Parker

Data Processing Reference : P-GJPO-1787 Analysis Date : 04/01/1997

Analysis Notes :

This borehole was logged in two log runs. A centralizer was used for both runs. The pre- and post-survey field verification spectra met the acceptance criteria established for peak shape and system efficiency. The energy and peak-shape calibration from the field verification spectra that best matched the spectra acquired during the logging runs were used to establish the channel-to-energy parameters used in processing these spectra.

Casing correction factors for a 0.280-in.-thick casing were applied during the analysis.

Cs-137 was the only man-made radionuclide detected in this borehole. Cs-137 contamination was detected only at the ground surface at an apparent concentration of about 10 pCi/g.

The log of the naturally occurring radionuclides shows increases in the K-40 concentration at 50 and 63 ft. The K-40 concentrations decrease slightly between 44 and 49 ft and increase relatively between 49 and 54. The K-40 concentrations decrease to a normal background range between 54 and 60 ft, decrease relatively between 61 and 63 ft, and increase to a higher background level below 63 ft. The relative U-238 and Th-232 concentrations also increase below 63 ft.

Details concerning the interpretation of data for this borehole are presented in the Tank Summary Data Reports for tanks S-109 and S-112.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.